Future bright for young girls…

What happens to those female science, mathematics and technology enthusiasts after Year 13?

The international outlook on numbers of women in science, technology and engineering is bleak. The consensus is that careers promotion is failing to reach them: that even if it may be going too far to say "girls just want to have fun", girls certainly don't want to don hard hats or lab coats.

But is this actually the case in New Zealand? Much of the received wisdom, both anecdotal and carefully researched, that reaches these shores and leads to further gloom on the state of the gender gap seems on closer inspection to not apply so clearly here.

While Samia Melhem, senior operations manager in the World Bank Group, wrote in a recent paper that "over the last two decades the number of young women adopting Sciences and Technology as fields of study has been dropping worldwide", the figures in New Zealand indicate that in this country the reverse may be true, at least at high school level.

In 2006, NZQA figures state that 217,500 girls obtained achievement standards in science, as opposed to 195,675 boys. Technology is arguably dominated by male students, but not to an extent to induce hand-wringing: 63,435 girls gained achievement standards in the subject compared to 68,378 boys. In maths the sexes are roughly even.

So New Zealand girls are leaving secondary school fully equipped to enrol in science, technology and engineering courses at university, an achievement for which schools should take credit.

The problem is that they regularly choose not to continue. While New Zealand can feel justly proud of the gender balance at Year 13, university is a different story. According to figures released by the Ministry of Education for 2006, of 1,113 students enrolled in Bachelors degree courses in Information Technology, just

Clare Foote, happy in her job as a Land Surveyor with The Surveying Company, Hastings

221 were female, as were a mere 960 of that year's intake of 5,267 engineering students. In natural and physical sciences the numbers are more even, with 6,656 girls to 7,028 boys. But many of the industries on which New Zealand's economy and infrastructure rely are suffering from the stubborn perception that certain career paths are not for girls.

Samia Melhem puts her finger on why this might be the case in the US: "The negative connotations associated with students of Sciences and Engineering in Modern America, with which I am familiar, abound: labels such as nerds, geeks etc. It is even worse when it comes to female engineers or computer scientists, almost always depicted as ugly lonely females with oversize glasses and facial acne; competing in social handicaps with their male counterparts. They are almost always opposed to the other cultural archetype: the hip Barbie-type classmate, with her belly button showing in a top model body,

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who talks in giggles with her clique members and seems to fit all possible stereotypes associated with beauty, brains and behaviour."

While this may not be so exaggerated in a country where rural practicality and efficiency with number 8 wire are the proud characteristics of both sexes, there does still seem to be a difficulty in persuading girls to make the leap from their interest in a subject in the classroom to its use in a career.

Initiatives such as Camp Techette, launched this year by two senior lecturers at Palmerston North UCOL to introduce girls in Year 13 to women working in ICT, are part of the solution. So is Futureintech.

Futureintech can help with the provision of role models. Several female Ambassadors have indicated their particular interest in working in girls' schools, where these fields may not be so prominently advocated. Consider making use of Futureintech Ambassadors in your classroom. New Zealand schools are breaking the global pattern of gender disparity at school level. Futureintech is keen to translate this to tertiary qualifications and careers.

Left: Jade Elstone is Sales Coordinator at Pan Pac Forest Products, Napier: "My boss has had a great influence on my career. He was willing to take on a female in this (male-dominated) industry and has given me the opportunity to be involved in different projects and parts of the business to learn and develop."

Right: Amy Clore is an Environmental Engineer with MWH: "I like my job because I am always meeting new people. Engineering is for you if you have lots of interests, as there are so many areas in which engineers can work. You need enthusiasm for working with people. It's not just number crunching."

Peter Spratt will be missed by all…

The Futureintech team was deeply saddened to learn of the sudden death of Peter Spratt on 9 August 2007.

As Senior Manager: Science and Education at the Royal Society of New Zealand, a position he had held since 1994, Peter was responsible for the promotion and support of science and technology education, as well as the promotion of public understanding of science and technology.

In this role he enthusiastically supported the aims of Futureintech and was generous with his time and ideas as a member of the Futureintech Advisory Board.

At the Royal Society he expanded the New Zealand Sciences, Mathematics and Technology Teacher Fellowship Scheme to its current intake of around 40 teachers a year, as well as re-branding the National Science and Technology Fair as Realise the Dream.

Peter was also the Executive Officer of the New Zealand Association of Science Educators and President-elect of the International Association of Science Educators (ICASE).

A warm, humorous and self-effacing man who was passionate about science and technology education, Peter will be much missed by all who knew him.

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New faces in the South Island

New full-time Facilitators have recently been appointed in both Christchurch and Dunedin, bringing the current total of regional Facilitators around the country to eight.

The new appointees are responsible for establishing and maintaining connections between schools and industries in their local area, and training young professionals to work with students as Ambassadors for their industries.

Lynne Newell began her role as Dunedin Facilitator on 19 July. A former primary school teacher and the recipient of a New Zealand Maths, Science and Technology Fellowship in 2003, Lynne has worked for the past two years as a self employed insurance consultant.

The opportunity to renew her contact with students and schools after a two-year absence from the classroom was the initial attraction to the position.

"I also believe strongly in the aim of Futureintech to promote careers in science and technology due to the shortage of young people taking up jobs in these areas and the fact that the number of jobs in these areas is increasing," Lynne says.

"I feel students do not know enough about the options available to them and I look forward to promoting these careers."

The opportunity to meet and interview young people working in a wide range of industries also appealed.

"Being hosted by Fulton Hogan puts me in amongst engineers and related professionals and I am enjoying meeting the people there and finding out about their careers."

In Christchurch, former secondary maths and science teacher **Colin Bell** joined Futureintech on 20 August. Before becoming a Facilitator Colin taught maths and physics at Hurunui College and has also worked as a primary science advisor for the Christchurch College of Education.

He sees Futureintech as a chance to broaden students' awareness of the real-world uses of subjects that are sometimes seen as solely academic.

"Like most science and maths teachers I'm fascinated by the applications of my subjects and strive to bring this perspective into the classroom. Students are keen to know how ideas are applied to real-life situations and discovering a new intellectual horizon or career possibility is highly significant to their attitude and interest."

"Hence the Futureintech approach of using Ambassadors to create links between the classroom and the outside world seems spot on to me. It provides a unique opportunity to enrich the learning experiences of students and to bring topics alive. Who better than a surveyor to demonstrate applications of trigonometry or a mechatronics engineer to discuss robotics?"

Colin sees his new role as offering an exciting opportunity to benefit students by combining the knowledge of teachers with that of Ambassadors.

"I'm looking forward to all aspects of the role including getting to know and support all existing Ambassadors; building relationships with industry and learning of career opportunities; linking with primary, intermediate and secondary teachers; and finding new Ambassadors to support school programme needs.

"In short: to doing everything I can to help Futureintech continue to build on the successful foundation already developed by the previous Facilitator, Neil Potter."

Contact your local Facilitator now!

To discuss how your school could benefit from this fantastic resource, please contact your local regional Futureintech Facilitator – see **www.futureintech.co.nz** for contact details.

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Futureintech news

In schools around the country, Futureintech is helping bring the technology, science and maths curricula to life.

In Auckland, **Waitakere College** recently held a careers evening to encourage more students to take up the sciences in the senior years. Futureintech Ambassadors took part to ensure that every science student in Years 11, 12 and 13 had the opportunity to meet a young science professional.

The Ambassadors included a mechanical engineer, a laboratory analyst and an environmental planner, all of whom spoke enthusiastically about their work and received a positive response from the students. **Kevin Loh**, a process engineer with **Watercare**, brought an oxygen meter and demonstrated the difference in oxygen content between tap water and boiled water.

During the school holidays, 26 students in the central North Island took the opportunity of the Bay of Plenty Food Technology Tour to get a closer understanding of careers in the food industry.

Futureintech, INSTEP, Massey University and NZIFST (the New Zealand Institute of Food Science and Technology) worked together with local industry to make the day possible.

At **The Grove**, students were given an insight into the production of avocado oil. This was followed by a visit to **Orica** where they learned about the wide range of career options a qualification in food technology can lead to.

In the afternoon, **Taura URC** hosted an interactive session in sensory testing, followed by a presentation and tour of **Allberry House**.

Ambassador Kevin Loh demonstrates an oxygen meter at Waitakere College
Future food technologists at Havelock North High School
Ambassador Oliver Thompson showing the laser views at Wainuiomata High School

Food technology was also on the menu at **Havelock North High School** where **Jayne Glasson**, a product development technologist at **Heinz Wattie's**, caught up with the Year 13 food technology class she worked with last term.

On a previous visit, Jayne had commissioned the class to create their Bit on the Side or Bit on the Top savoury or sweet sauces. The students conducted market research and developed their own concepts and products, which Jayne then evaluated, providing the class with professional feedback.

At **Wainuiomata High School** in Wellington, students were given a sneak preview of what's going on at **Industrial Research Ltd**. Physicist **Oliver Thompson** used a laser and specially developed software to investigate blood flow under the skin, screening a standard (monochromatic) laser view of the teacher's skin alongside an analysed view revealing the blood flow, at its strongest around a recent scratch.

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